DOCUMENT RESUME

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ABSTRACT

This activity is designed to build creative skills based on an everyday problem. The scenario that sometimes packages are dropped and letters get bent is used. How can a special delivery be protected from such unfortunate mishaps? Students use their creative skills to determine a way to mail raw spaghetti. A way to safely package the raw spaghetti is chosen using only the materials provided. To test the packing designs, the spaghetti is mailed through the postal system and evaluated after delivery. This activity requires a 20-minute time period for completion. (Author/SOE)

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ED 480 782

Activity: **Design Packing to Safely Mail Raw Spaghetti**

GRADE LEVELS: 3-5

SUMMARY:

Accidents happen, sometimes your packages are dropped, and letters get bent. How can you protect a special delivery from such unfortunate mishaps? Students will use their creative skills to determine a way to mail raw spaghetti. The students will need to choose a way to safely package their raw spaghetti using only the materials provided. To test the packing designs, the spaghetti will be mailed through the postal system and evaluated after delivery.

LEVEL OF DIFFICULTY [1 = Least Difficult : 5 = Most Difficult]

4-difficult

TIME REQUIRED

20 minutes plus discussion time

COST

$20-$30 per class

STANDARDS:

1.1 Identify materials used to accomplish a design task based on a specific property, i.e. weight, strength, hardness, and flexibility.

2.3 Identify relevant design features (e.g., size, shape, weight) for building a prototype of a solution to a given problem.

WHAT WILL THE STUDENTS LEARN?

Design and packaging techniques.

What happens to mail in the postal system.

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BACKGROUND INFORMATION:

Sending mail in the postal system is not always the safest. Mail can get bent or dropped, etc. It is up to the student to design a safe packaging for the spaghetti.

RECOMMENDED RESOURCES:

http://www.usps.com/history/history/his1.htm#contents

Postal History

http://www.papermart.com/index.html

Sells different packaging materials such as boxes and packing materials

http://www.si.edu/postal/exhibits/mail5.html

History of "moving the mail"- explore all the links

http://pe.usps.gov/cpim/ftp/pubs/Pub2/Pub2.pdf

USPS shipping suggestions, regulations, and material descriptions

http://pe.usps.gov/cpim/ftp/pubs/Pub2/Pub2.pdf

Related activity – Egg drop and the packaging considerations

MATERIALS:

Raw spaghetti (handful per student)

8 ½" x 11" Envelopes

Stamps

Packaging materials

Newspaper

Tissue paper

Packing foam

Construction paper

Bubble wrap

Tape

PREPARATION:

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Assemble materials

DIRECTIONS:

Talk about what happens to the mail after it is placed in the post office mailbox. Discuss with the class, what might happen to their package as it travels through the mail.

1. Divide students into small groups.
2. Give each group a handful of raw spaghetti and an envelope.
3. Have students package the spaghetti so that it may be mailed. Remind students that they may only use the materials provided.
4. To test the packing styles, students can mail the spaghetti. Have the students mail the spaghetti back to the school. Make sure each student puts their name on their envelope so that when the spaghetti comes back the students will know which one is theirs.

INVESTIGATING QUESTIONS:

What packaging worked the best? Why?

What is important to keep in mind when packing the spaghetti?

What is the best way to pack it?

What happened to the spaghetti that did not make it through the mail safely?

How can this activity be applied to real life situations?

How many students mailed their spaghetti safely?

REFERENCES:

none

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Rubric for Performance Assessment						
Activity Title:	Design Packing to Safely Mail Raw Spaghetti			Grade Level		
	1	2	3	4		
Criteria	Beginning	Developing	Proficient	Advanced	Weight (X factor)	Subtotal
PACKING OF SPAGHETTI	Student did not create a package.	Package is sloppy.	Package is sturdy and well-built.	Package is well thought-out, creative, and goes beyond expectations.		
TEAMWORK	Student did not work with the group in constructing the package.	Student helped slightly, but did not work well with the group.	Student participated in most of the group work.	Student worked well in the group and played an active role in constructing the package.		
					Total:	
Teacher Comments:						

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Activity Evaluation Form

Activity Name: _____

Grade Level the Activity was implemented at:_____

Was this Activity effective at this grade level (if so, why, and if not, why not)?

What were the Activity's strong points?

What were its weak points?

Was the suggested Time Required sufficient (if not, which aspects of the Activity took shorter or longer than expected)?

Was the supposed Cost accurate (if not, what were some factors that contributed to either lower or higher costs)?

Do you think that the Activity sufficiently represented the listed MA Framework Standards (if not, do you have suggestions that might improve the Activity's relevance)?

Was the suggested Preparation sufficient in raising the students' initial familiarity with the Activity's topic (if not, do you have suggestions of steps that might be added here)?

If there were any attached Rubrics or Worksheets, were they effective (if not, do you have suggestions for their improvement)?

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I. DOCUMENT IDENTIFICATION:

Title: PreK-12 Engineering Activities

1) Touch and Discover, Grades PreK-2
http://www.prek-12engineering.org/data/d2/Touchdiscover.pdf

2) Invent a Backscratcher from Everyday Materials, Grades PreK-2
http://www.prek-12engineering.org/data/d28/Backscratcher.pdf

3) Compare Human-Made Objects with Natural Objects, Grades PreK-5
http://www.prek-12engineering.org/data/d34/HumanvsNatural.pdf

4) Do Different Colors Absorb Heat Better?, Grades PreK-2
http://www.prek-12engineering.org/data/d37/Absorbheat.pdf

5) Which Roof is Tops?, Grades PreK-2
http://www.prek-12engineering.org/data/d44/RoofTops.pdf

6) Make Your Own Recycled Paper, Grades PreK-2
http://www.prek-12engineering.org/data/d56/Recycle.pdf

7) Build an Approximate Scale Model of an Object Using LEGOs, Grades 3-5
http://www.prek-12engineering.org/data/d3/LegoScaleModel.pdf

8) Design Weather Instruments using Lego Sensors, Grades 3-5
http://www.prek-12engineering.org/data/d4/LegoWeather.pdf

9) Space Shelter, Grades 3-5
http://www.prek-12engineering.org/data/d5/SpaceShelter.pdf

10) Build a Bird House, Grades 3-5
http://www.prek-12engineering.org/data/d6/BirdHouse.pdf

11) Ball Bounce Experiment, Grades 3-5
http://www.prek-12engineering.org/data/d6/BallBounce.pdf

12) Make an Alarm!, Grades 3-5
http://www.prek-12engineering.org/data/d11/MakeAlarm.pdf

13) Design Packing to Safely Mail Raw Spaghetti, Grades 3-5
http://www.prek-12engineering.org/data/d17/MailSpaghetti.pdf

14) Disassemble a Click Pen, Grades 3-5
http://www.prek-12engineering.org/data/d33/clickPen.pdf

15) Construct And Test Roofs for Different Climates, Grades 3-5
http://www.prek-12engineering.org/data/d35/ClimateRoof.pdf

16) Compare Fabric Materials, Grades 3-5
http://www.prek-12engineering.org/data/d36/Fabric.pdf

17) A House is a House for Me, Grades 3-5
http://www.prek-12engineering.org/data/d52/House.pdf

18) Water Filtration, Grades 3-5
http://www.prek-12engineering.org/data/d53/Water Filtration.pdf

19) What is the Best Insulator: Air, Styrofoam, Foil, or Cotton?, Grades 3-5
http://www.prek-12engineering.org/data/d54/BestInsulator.pdf

20) Design a Recycling Game!, Grades 3-5
http://www.prek-12engineering.org/data/d55/Recycling.pdf

21) Tower Investigation and the Egg, Grades 6-8
http://www.prek-12engineering.org/data/d7/TowerEgg.pdf

22) Wimpy Radar Antenna!, Grades 6-8
http://www.prek-12engineering.org/data/d10/WimpyAntenna.pdf

23) Portable Sundial, Grades 6-8
http://www.prek-12engineering.org/data/d30/PortableSundial.pdf

24) An Introduction To Loads Acting on Structures, Grades 6-8
http://www.prek-12engineering.org/data/d31/IntroLoads.pdf

25) Design Your Own Rube Goldberg Machine, Grades 6-8
http://www.prek-12engineering.org/data/d32/RubeGoldberg.pdf

26) Building Tetrahedral Kites, Grades 6-8
http://www.prek-12engineering.org/data/d38/tetrakites.pdf

27) Do as the Romans: Construct an Aqueduct!, Grades 6-8
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28) Build an Earthquake City!!, Grades 6-8
http://www.prek-12engineering.org/data/d40/EarthquakeCity.pdf

29) Design a Parachute, Grades 6-8
http://www.prek-12engineering.org/data/d41/Parachute.pdf

30) The Squeeze is On, Grades 6-8
http://www.prek-12engineering.org/data/d42/Squeeze.pdf

31) Stop The Stretching, Grades 6-8
http://www.prek-12engineering.org/data/d43/StopStretching.pdf

32) Speaker Project, Grades 9-10
http://www.prek-12engineering.org/data/d13/Speaker.pdf

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